Trend Study 13B-5-00

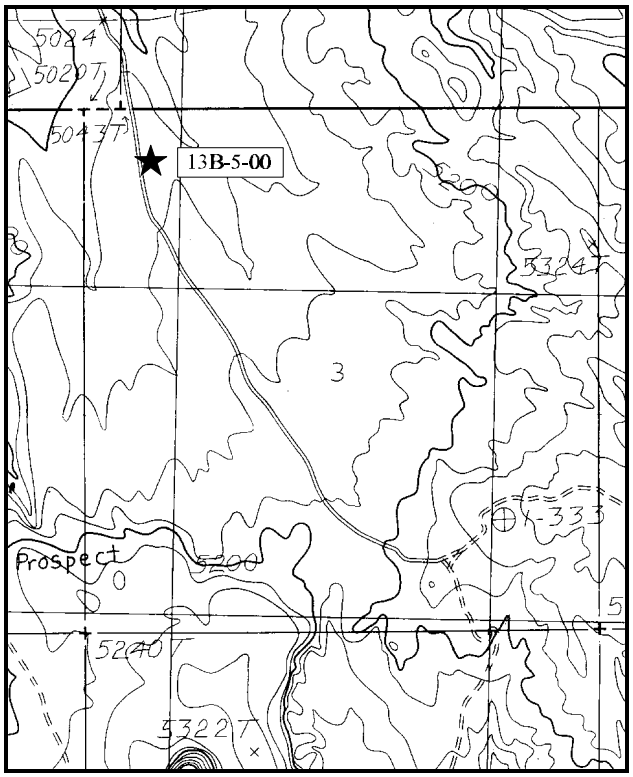
Study site name: Buckhorn Draw . Range type: Big Sagebrush-Grass .

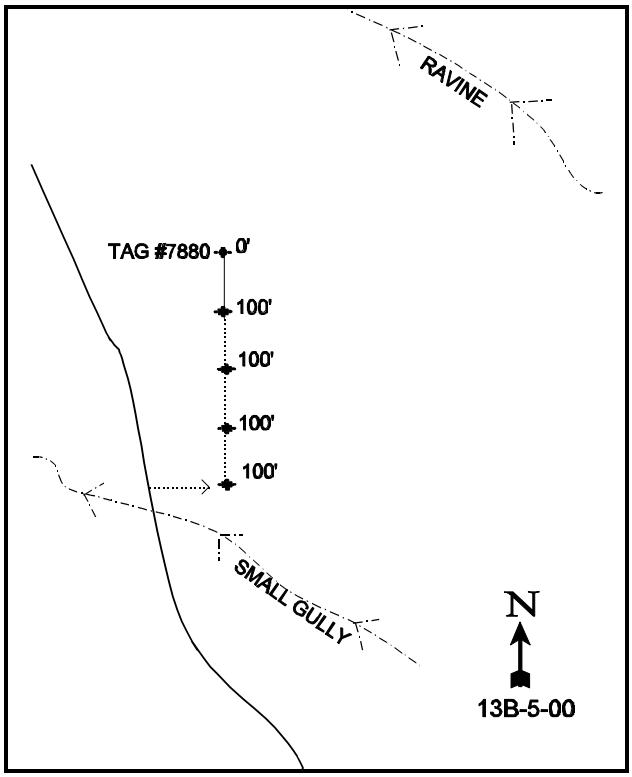
Compass bearing: frequency baseline 165°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

From the Utah-Colorado state line west of Glade Park travel 2.1 miles to a cattle guard. Continue west 2.1 miles to the Red Cliffs transect(13B-4-00). Continue west on the main road 4.0 miles to a fork. Stay left and go 2.4 miles to Coates Creek. Cross the creek and continue 0.6 miles to a fork. Stay left, go 2.5 miles to a cattle guard. Proceed 3.5 miles to another cattle guard. Go 0.3 miles past the cattle guard and stop. The transect is on the left (east) side of the road. The 0-foot end of the baseline (found 400 feet north) is also marked by a fence post, tagged #7880. All other plot markers are short rebar stakes.





Map Name: Blue Chief Mesa Diagrammatic Sketch

Township 23S , Range 25E , Section 3 UTM 4300371.278 N, 660935.108 E

DISCUSSION

Trend Study No. 13B-5 (34-5)

The Buckhorn Draw site is a open bench at an elevation of about 5,100 feet. It is gently sloping (8%) to the northwest. Deep washes to the east and west intermittently carry water and drain to the north. The area supports a mixed desert shrub community dominated by broom snakeweed, Wyoming big sagebrush, spiny hopsage and perennial grasses with some scattered junipers. It is grazed by cattle and used as winter range for deer and elk. The area is within the Buckhorn allotment. This is a very large allotment consisting of 12 pastures. Grazing occurs on a deferred rotational basis from October 1st to May 30th using a holistic grazing plan of high intensity and short duration. In 1986, the BLM estimated use of sagebrush to be heavy (60%-80%), but much of this could be cow use, because it is a winter cattle allotment. Deer pellet groups were scattered throughout the area at moderate levels as well as moderate numbers for rabbit, with low counts for cattle and very low numbers for elk. Pellet-group transects data from 2000 estimate 1 elk days use/acre (<1edu/ha), 27 deer days use/acre (11 ddu/ha), and 20 cow days use/acre (8 cdu/ha).

The soil is a fine sandy loam, well drained, and deep with an effective rooting depth of 19 inches. There is a compacted layer of fine silty sand at about 12 inches with a noticeable accumulation of calcium carbonate. The soil reaction is mildly alkaline (pH 7.6) with a moderately high soil temperature (60° F). The amount of phosphorus in the soil could be a limiting factor at only 2.3 ppm, where 10 ppm is thought minimal for normal plant growth and development. Percent bare ground decreased between 1986 to 1995. However, since then with severe drought, percent bare soil has increased to a all time high of 55%. Protective ground cover comes from an almost equal percent of vegetation and litter. Most of the vegetative cover is contributed by grasses. Forbs are of little consequence on this site as they only provide about 1- 3% of the total vegetative cover with most of the cover provided by annual species. No rock or pavement cover was encountered on the site. The gentle slope mitigates erosion from becoming excessive, although there is one small gully running southwest of the transect.

The key browse species are Wyoming big sagebrush and spiny hopsage. In the past (1986), Wyoming big sagebrush had about as many decadent plants as mature plants in the population. Then in 1995, there was a higher proportion of mature plants with as well as a decreased percentage of decadent plants (from 40% to 12%). In 1995, 1/3 of the population was classified as young with a slightly higher proportion of seedlings compared to 1986 (13% vs 20% biotic potential). Mature plants also increased in height and crown measurements nearly doubled. In 1986, use was extremely heavy with 87% of the plants sampled exhibiting heavy hedging. In 1995 and 2000, use is mostly light to moderate with heavy use at only 6%-9%.

The spiny hopsage population is mature with moderate to heavy hedging. In exceptionally dry years, spiny hopsage tends to loose its leaves which makes it difficult to determine its true condition. Vigor was classified as poor on all plants sampled in 1986. Currently (‘00) only about 1/4 of the plants sampled displayed poor vigor. Spiny hopsage is utilized primarily in the spring by livestock and wildlife with its usefulness decreasing into the summer. Broom snakeweed remains the most abundant browse species. It has a mostly mature population with little biotic potential (# of seedlings) being expressed at this time. Other less abundant shrubs include; cactus, green ephedra, and blackbrush. Junipers are scattered throughout the area with the point-center quarter method estimating a density of only about 28 trees/acre.

Through the years only about 1-3% of the vegetative cover comes from forbs, most of which are annual species. Grass cover is higher on this site than many of the other sites in this unit. Grasses on average provide 56% of the vegetative cover with a majority coming from perennial species (on average almost 72% of the grass cover). Sand dropseed provides most of the perennial herbaceous cover on this site. The other common perennial grass is three-awn, a warm season grass that has poor forage value most of the year. It is an increaser and most often

indicates long term range deterioration. Indian ricegrass is present at a moderate density. Cheatgrass provided 36% of the grass cover in 1995 with a 100% quadrat frequency. Now with the currently very dry year (2000), it provides only about 20% of the grass cover and has a quadrat frequency of only 86%. All forbs combined do not contribute even 1% total cover for any year sampled.

1986 APPARENT TREND ASSESSMENT

The deteriorating population of the palatable spiny hopsage is an indication of a future downward browse tend. Sagebrush vigor is generally good, but this species may be harmed by increasing future use as hopsage becomes unavailable. Broom snakeweed is likely to increase, but numbers of this species fluctuate so much they are not a good indicator of trend. Little soil movement is detectable, although there is a large amount of bare soil in the interspaces. There is room for improvement in litter and vegetative cover. The soil trend appears to be stable at this time.

1995 TREND ASSESSMENT

The relative amount of bare soil has decreased since 1986, but is still moderately high. No signs of erosion are present now, but this is more likely due to the almost level terrain of the site which lends itself to a more stable soil trend. Although there is ample grass cover, most of the grasses are increasers or invaders. Since the nested frequency for perennial grasses has stayed nearly the same and forbs comprise less than 3% of the vegetative cover, the herbaceous understory is stable but characterized by a poor species composition. The browse trend is slightly up with a more vigorous spiny hopsage population. The Wyoming big sagebrush population has fewer decadent plants and a higher proportion are classified as young plants. The broom snakeweed population should be monitored and could easily increase with poor management.

TREND ASSESSMENT
soil - stable (3)
browse - slightly upward (4)
herbaceous understory - stable (3) but poor composition

2000 TREND ASSESSMENT

The relative amount of bare soil has increased since 1995, while relative percent cover of vegetation and litter declined. Trend for soil is considered slightly down. However, there are no signs of erosion present, but this is more likely due to the well drained characteristics of the sandy soil and almost level terrain of the site.
The browse trend is stable with improvement to Wyoming big sagebrush but spiny hopsage is slightly down. The broom snakeweed population should be monitored and could easily increase with poor management. Since the nested frequency for perennial grasses has stayed nearly the same and forbs comprise less than 1% of the vegetative cover, herbaceous understory is stable.

TREND ASSESSMENT
soil - slightly down (2)
browse - stable (3)
herbaceous understory - stable (3)

HERBACEOUS TRENDS --
Herd unit 13B, Study no: 5

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'86	'95	'00	'86	'95	'00	'95	'00
G	Aristida purpurea	68	73	75	27	33	30	2.42	3.20
G	Bromus tectorum (a)	-	$_{b}$353	$_{a}$237	-	100	86	4.07	2.65
G	Oryzopsis hymenoides	18	35	32	8	15	14	.20	.46
G	Sporobolus cryptandrus	156	137	160	63	56	61	4.66	6.79
G	Vulpia octoflora (a)	-	20	18	-	8	8	.04	.07
Total for Annual Grasses		0	373	255	0	108	94	4.11	2.72
Total for Perennial Grasses		242	245	267	98	104	105	7.28	10.46
Total for Grasses		242	618	522	98	212	199	11.40	13.18
F	Calochortus nuttallii	-	-	4	-	-	1	-	.00
F	Cryptantha spp.	$_{a}$-	$_{b}$24	$_{a}$-	-	10	-	.05	-
F	Cymopterus spp.	$_{a}$-	$_{ab}$6	$_{b}$14	-	2	6	.01	.03
F	Erodium cicutarium (a)	-	$_{a}$5	$_{b}$12	-	2	6	.01	.03
F	Eriogonum spp.	-	15	-	-	6	-	.03	-
F	Gilia spp. (a)	-	-	3	-	-	1	-	.00
F	Lappula occidentalis (a)	-	-	1	-	-	1	-	.00
F	Lepidium densiflorum (a)	-	$_{b}$37	$_{a}$3	-	17	1	.08	.00
F	Lygodesmia grandiflora	$_{a}$-	$_{b}$7	$_{ab}$3	-	4	1	.04	.00
F	Plantago patagonica (a)	-	$_{b}$147	$_{a}$29	-	65	13	.32	.06
F	Sphaeralcea coccinea	$_{a}$-	$_{b}$19	$_{a}$-	-	7	-	.06	-
Total for Annual Forbs		0	189	48	0	84	22	0.41	0.10
Total for Perennial Forbs		0	71	21	0	29	8	0.19	0.04
Total for Forbs		0	260	69	0	113	30	0.61	0.15

Values with different subscript letters are significantly different at % = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 13B, Study no: 5

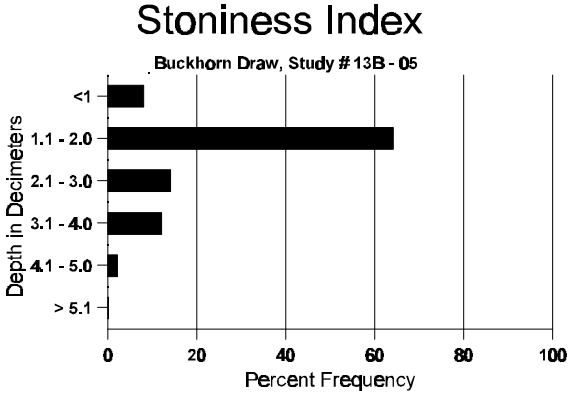
Type	Species	Strip Frequency '95	Strip Frequency '00	Average Cover % '95	Average Cover % '00
B	Artemisia tridentata wyomingensis	31	28	.82	1.63
B	Coleogyne ramosissima	3	5	-	1.63
B	Grayia spinosa	33	28	3.76	4.67
B	Gutierrezia sarothrae	65	71	3.95	1.60
B	Opuntia spp.	4	8	.06	.33
B	Sclerocactus	0	1	-	-
Total for Browse		136	141	8.60	9.89

BASIC COVER --
Herd unit 13B, Study no: 5

Cover Type	Nested Frequency '95	Nested Frequency '00	Average Cover % '86	Average Cover % '95	Average Cover % '00
Vegetation	357	300	8.50	24.78	23.74
Rock	-	-	0	0	0
Pavement	-	3	0	0	.00
Litter	382	355	42.00	25.71	24.92
Cryptogams	133	155	.75	2.11	5.05
Bare Ground	278	357	48.75	33.26	54.67

SOIL ANALYSIS DATA --
Herd Unit 13B, Study # 5, Study Name: Buckhorn Draw

Effective rooting depth (inches)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
18.87	60.4 (18.03)	7.6	64.0	18.0	18.0	0.3	2.3	99.2	0.6



PELLET GROUP FREQUENCY --
Herd unit 13B, Study no: 5

Type	Quadrat Frequency		Pellet Transect	
			Pellet Groups per Acre	Days Use per Acre (ha)
	'95	'00	'00	'00
Rabbit	21	19	270	N/A
Elk	2	1	17	1 (2)
Deer	28	23	348	27 (67)
Cattle	5	9	235	20 (49)

BROWSE CHARACTERISTICS --
Herd unit 13B, Study no: 5

AGE	YR	Form Class (No. of Plants)									Vigor Class				Plants Per Acre	Average (inches)		Total
		1	2	3	4	5	6	7	8	9	1	2	3	4		Ht.	Cr.	
Artemisia tridentata wyomingensis																		
S	86	1	1	-	-	-	-	-	-	-	1	1	-	-	66			2
	95	10	-	-	-	-	-	-	-	-	10	-	-	-	200			10
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	86	-	-	2	-	-	-	-	-	-	2	-	-	-	66			2
	95	16	1	-	-	-	-	-	-	-	17	-	-	-	340			17
	00	4	-	-	5	-	-	-	-	-	9	-	-	-	180			9
M	86	-	1	6	-	-	-	-	-	-	7	-	-	-	233	11	13	7
	95	4	22	2	-	-	-	-	-	-	28	-	-	-	560	16	24	28
	00	25	11	3	3	2	-	-	-	-	44	-	-	-	880	17	22	44
D	86	-	1	5	-	-	-	-	-	-	6	-	-	-	200			6
	95	4	1	-	-	-	1	-	-	-	2	-	-	4	120			6
	00	-	1	-	2	-	2	-	-	-	4	-	-	1	100			5
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	13%	87%	00%	+51%
'95	47%	06%	08%	+12%
'00	24%	09%	02%	

Total Plants/Acre (excluding Dead & Seedlings)				
'86	499	Dec:		40%
'95	1020			12%
'00	1160			9%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus nauseosus																		
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	6	14	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'95	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	0	Dec:	-
	'95	0		-
	'00	0		-

Chrysothamnus viscidiflorus stenophyllus																		
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	18	35	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'95	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	0	Dec:	-
	'95	0		-
	'00	0		-

Coleogyne ramosissima																		
Y	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	00	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	86	-	-	5	-	-	-	-	-	-	5	-	-	-	166	15	31	5
	95	-	-	-	1	1	-	-	-	-	2	-	-	-	40	27	50	2
	00	4	-	-	2	-	-	-	-	-	6	-	-	-	120	21	36	6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	100%	00%	-64%
'95	33%	00%	00%	+63%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	166	Dec:	-
	'95	60		-
	'00	160		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Ephedra viridis																		
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	27	27	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'95	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	0	Dec:	-
	'95	0		-
	'00	0		-

Grayia spinosa																		
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	4	22	4	-	-	-	26	-	4	-	600	17	33	30
	00	5	1	-	-	-	-	-	-	-	6	-	-	-	120	18	33	6
D	86	-	-	9	-	-	-	-	-	-	-	-	9	-	300			9
	95	3	1	-	1	6	1	-	-	2	6	-	3	5	280			14
	00	-	-	-	29	-	15	1	-	-	33	-	-	12	900			45

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	100%	100%	+66%
'95	66%	16%	27%	+14%
'00	02%	29%	24%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	300	Dec:	100%
	'95	880		32%
	'00	1020		88%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Gutierrezia sarothrae																		
S	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	3	-	-	2	-	-	-	-	-	5	-	-	-	100			5
	00	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
Y	86	26	-	-	-	-	-	-	-	-	26	-	-	-	866			26
	95	29	-	-	-	-	-	-	-	-	29	-	-	-	580			29
	00	35	-	-	-	-	-	-	-	-	35	-	-	-	700			35
M	86	171	1	-	-	-	-	-	-	-	172	-	-	-	5733	9	5	172
	95	131	-	-	3	-	-	-	-	-	134	-	-	-	2680	11	15	134
	00	157	-	-	-	-	-	-	-	-	157	-	-	-	3140	6	8	157
D	86	33	1	1	-	-	-	-	-	-	35	-	-	-	1166			35
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	11	-	-	-	-	-	-	-	-	-	-	-	11	220			11
X	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	840			42

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	.85%	.42%	00%	-58%
'95	00%	00%	00%	+20%
'00	00%	00%	05%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	7765	Dec:	15%
	'95	3260		0%
	'00	4060		5%

Juniperus osteosperma																		
M	86	1	-	-	-	-	-	-	-	-	1	-	-	-	33	63	63	1
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	
'95	00%	00%	00%	
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	33	Dec:	-
	'95	0		-
	'00	0		-

Opuntia spp.																		
M	86	2	-	-	-	-	-	-	-	-	2	-	-	-	66	4	6	2
	95	6	-	-	-	-	-	-	-	-	4	-	-	2	120	6	17	6
	00	11	-	-	-	-	-	-	-	-	11	-	-	-	220	7	12	11

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'86	00%	00%	00%	+45%
'95	00%	00%	33%	+45%
'00	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'86	66	Dec:	-
	'95	120		-
	'00	220		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Sclerocactus																		
Y	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	00	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
M	86	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	95	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	00	-	-	-	-	-	-	-	-	-	-	-	-	-	0	5	3	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'86	00%	00%	00%
'95	00%	00%	00%
'00	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)			Dec:
	'86	0	-
	'95	0	-
	'00	20	-